



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/645,616 | 08/22/2003 | Ching-Hsiang Chan | 4006-263 | 8269 |
| 22429 | 7590 | 10/31/2005 | EXAMINER | |
| LOWE HAUPTMAN GILMAN AND BERNER, LLP 1700 DIAGONAL ROAD SUITE 300 /310 ALEXANDRIA, VA 22314 | | | SCHATZ, CHRISTOPHER | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1733 | |

DATE MAILED: 10/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/645,616

Applicant(s)

CHAN ET AL.

Examiner

Christopher T. Schatz

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-16 and 18-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Species A in the reply filed on September 22, 2005 is acknowledged. The traversal is on the ground(s) that Examiner has failed to follow proper USPTO procedure. This is not found persuasive. Examiner clearly stated that the species are patentably distinct in the requirement. On page 6, last paragraph of applicant's specification, applicant describes two different methods of application. Examiner asserts that one of ordinary skill in the art would readily appreciate that using a fluid to locate spacers on a mould and using a direct spray method are two mutually exclusive application methods.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4-6, 12, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Minowa et al. '997

Minowa et al. discloses a method of locating spacers 1 on a substrate, said method comprising: providing a mould 25 with a plurality of trenches 26; locating a plurality of spacers

Art Unit: 1733

1 on said mould and vibrating said mould to make said spacers fall into said trenches (column 6, lines 4-10); coating a glue 23b on a first substrate 22b (column 5, lines 30-37); bringing said first substrate into contact with said mould to make said spacers adhere to said first substrate (figure 6, column 6, lines 42-49); and removing said spacers from said trenches (figures 3, 4).

As to claim 4, Minowa et al. discloses a method of locating spacers on a substrate wherein said method further comprises temporarily fixing said spacers in said trenches when said spacers fall into said trenches (column 6, lines 18-24, lines 50-57). As to claim 5, Minowa et al. discloses a method of locating spacers on a substrate wherein said trenches penetrate said mould (figures 2,3). As to claim 6, Minowa et al. discloses a method of locating spacers on a substrate further comprising providing a second substrate 22a, wherein said second substrate is brought into contact with said mould and a viscous substance 23a is formed on said second substrate for temporarily fixing said spacers when said spacers fall into said trenches (column 6, lines 4-24, 50-57). As to claim 12, Minowa et al. discloses a method of locating spacers on a substrate wherein said spacer is rectangular (figures 2, 3, claim 1). As to claim 13, Minowa et al. discloses a method of locating spacers on a substrate wherein an open area of said trench is larger than a bottom area of said trench (column 6, lines 9-10, figures 2, 3). As to claim 14, Minowa et al. discloses a method of locating spacers on a substrate wherein the trench further comprises a bulge. Applicant is referred to figures 2 and 3, where the reference displays that the trench is tapered half way down to the bottom of the trench. Examiner interprets the portion of the trench from the end of the tapered part of the bottom of the trench as a bulge.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al. as applied to claims 1 and 4 above and in view of Green et al. (US 2003/0207644).

Minowa et al. discloses a method as stated in claims 1 and 4, but the reference is silent as to a method wherein fluid is used to locate spacers on a mould. Green et al. discloses a method of forming components 40 on a substrate 10, said substrate comprising a plurality of trenches 30, wherein fluid used to locate the components on a mould, and the mould is vibrated to make the components fall into the trenches (paragraph 0010, 0053, 0059). Green et al. further discloses that using fluid a location means is well-known in the art, and advantageous because components are spread across the substrate such that a component falls within each said trench (paragraph 0053). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to use fluid to locate spacers on the mould as taught by Green et al. above in the process of forming spacers on a substrate as set forth above by Minowa et al.

As to claim 9, Green et al. discloses a method wherein an electrostatic charge is used to fix components in their respective trenches. Using an electrostatic charge is advantageous because, as disclosed by Green et al., doing so aids in properly holding said components in the trenches (paragraph 0010). Additionally, an electrostatic is a well-known alternative fixing

Art Unit: 1733

method to using an adhesive (paragraph 0036). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art provide a static electricity fixing apparatus to fix spacers having fallen in trenches as taught by Green et al. above in the method of forming spacers on a substrate as set forth above by Minowa et al.

6. Claims 7, 8, 15, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al. as applied to claim 1 above, and in further view of Anker et al. '679.

Minowa et al. discloses a method as stated in claim 1, but the reference is silent as to a method wherein the viscous substance is neutralized by UV light. Anker et al. discloses a method wherein UV light is used to neutralize an adhesive layer, and a laminate is then removed from said neutralized adhesive layer (column 5, lines 31-45, column 6, lines 40-43, column 8, line 66 – column 9, line 12). The reference further discloses that using UV light to neutralize an adhesive layer is widely used in the electronics industry because it is simple process that does not require any special equipment (column 5, lines 38-43). Thus, at the time of the invention it would have been obvious to a person of ordinary skill in the art to use UV light to illuminate the and neutralize an adhesive layer on a substrate as taught by Anker et al. above in the process of forming spacers on a substrate as set forth above by Minowa et al.

As to claim 8, examiner established above that it is obvious to modify the method of Minowa et al. by using a UV light to neutralize an adhesive layer. Additionally, Minowa et al. discloses it would have been obvious to one of ordinary skill in the art to remove the spacers disclosed by Minowa et al. after neutralization of the adhesive layer. As to claim 15, Minowa et al. discloses a method of locating spacers 1 on a substrate, said method comprising: forming a

Art Unit: 1733

plurality of trenches 26 in a mould 25, wherein said trenches penetrate said mould (figures 2, 3); coating a viscous substance on a first substrate (column 5, lines 32-34); bonding said first substrate to said mould, wherein the trenches on the mould partially expose said viscous substance (figures 2, 3), locating a plurality of spacers 1 on said mould and vibrating said mould to make said spacers fall into said trenches (column 6, lines 4-10); wherein said spacers are temporarily fixed in said trenches by said viscous substance (column 6, lines 18-24, lines 50-57); coating a glue on a second substrate (column 5, lines 30-37); bringing said first substrate into contact with said mould to make said spacers adhere to said second substrate (figure 6), column 6, lines 42-49); and removing said spacers from said trenches (figure 3 - figure 4). The reference is silent as to a step wherein UV light is used to neutralize the viscous layer. This limitation is the same as claim 7 and examiner stated above why Anker et al. meets this limitation and further presented reasons as to why one of ordinary skill in the art would have been motivated to combine Anker et al. with Minowa et al. Thus, the claim is rendered obvious. Claims 20, 21, and 22 are analogous to claims 12, 13, and 14, respectively. Applicant is referred to paragraph 3 above for the reasons as to why the Minowa et al. meets the limitations of all three claims.

7. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al. as applied to claim 1 above, and in further view of Cathey et al (US 2001/0054866).

Minowa et al. discloses a method as stated in claim 1, but the reference is silent as to a method wherein the spacer is a cruciform. Cathey et al. discloses a method of locating spacers on a substrate wherein said spacer is a cruciform (figure 4a). The reference further discloses that use of a cruciform is a well-known alternative to a rectangular cruciform and advantageous because

Art Unit: 1733

it provides support to stresses exerted on the spacers (paragraph 0078). Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to use a spacer shaped like a cruciform as taught by Cathey et al. above in the process of spacers on a substrate as set for the above by Minowa et al. As to claim 11, examiner asserts that it would have been obvious to one of ordinary skill in the art for a cruciform spacer to be arranged in the diagonal of a trench such that said cruciform shaped spacer can properly fit in said trench.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al. and Anker et al. as applied to claim 15 above, and in further view of Green et al. (US 2003/0207644).

Minowa et al. and Anker et al. disclose a method as stated in claim 1, but the references are silent as to a method wherein fluid is used to locate spacers on a mould. Green et al. discloses a method of using fluid to locate components 40 on a substrate 10, and further discloses said method is advantageous as discussed in paragraph 5 above. Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to use fluid to locate spacers on the mould as taught by Green et al. above in the process of forming spacers on a substrate as set forth above by Minowa et al. and Anker et al.

9. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al. and Anker et al. as applied to claim 15 above, and in further view of Cathey et al (US 2001/0054866).

Minowa et al. and Anker et al. disclose a method as stated in claim 15, but the references are silent as to a method wherein the spacer is a cruciform. Cathey et al. discloses a method of locating spacers on a substrate wherein said spacer is a cruciform (figure 4a) and further

Art Unit: 1733

discloses that use of a cruciform is a well-known and advantageous as discussed in paragraph 7 above. Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to use a spacer shaped like a cruciform as taught by Cathey et al. above in the process of spacers on a substrate as set for the above by Minowa et al. and Anker et al. As to claim 19, examiner presented reasons as to why the combination of references meet the limitation of the claim in the discussion of claim 11 above.

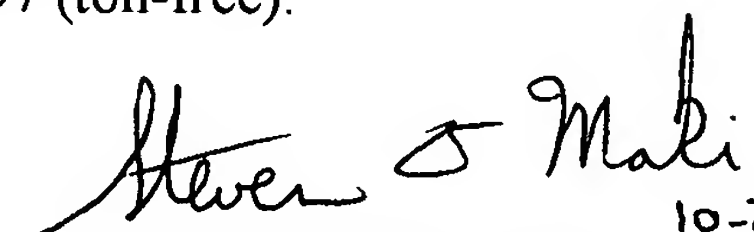
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Christopher T. Schatz** whose telephone number is **571-272-1456**. The examiner can normally be reached on 10:00-7:30, Monday -Thursday, 10:00-6:30 Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CTS


STEVEN D. MAKI
PRIMARY EXAMINER
10-28-05